

REMARKS

By the present amendment, claims 18-22, 28-31 and 32-34 are pending in the application.

Support For New Claims

New independent claim 32 is a combination of prior independent claim 24 and prior dependent claim 25.

New dependent claims 33 and 34 correspond to prior dependent claims 26 and 27, respectively.

Allowable Subject Matter

The applicants are pleased to note that the Office Action advises at page 3 that claims 28 to 30 are allowed.

In the prior prosecution history, there has been no rejection of prior dependent claims 25, 26 and 27 over the prior art.

It is therefore submitted that new independent claim 32, and claims 33 and 34 dependent thereon, are allowable over the prior art.

§112, ¶2

Claims 25-27 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Dependent claims 25-27 were rejected because they depended on canceled independent claim 24.

As is apparent from the prosecution history, there has been no intention to cancel the subject matter claimed by dependent claims 25-27.

By the present amendment, dependent claims 25-27 have been canceled and rewritten as independent claim 32 and dependent claims 33 and 34.

New independent claim 32 is a combination of prior independent claim 24 and prior dependent claim 25.

New dependent claim 33, dependent on claim 32, corresponds to prior dependent claim 26.

New dependent claim 34, dependent on claim 32, corresponds to prior dependent claim 27.

It is respectfully requested that the rejection under 35 U.S.C. §112, second paragraph, as applied to new claims 32-34 of the present amendment, be withdrawn.

As previously discussed, in the prior prosecution history, there has been no rejection of prior dependent claims 25, 26 and 27 over the prior art.

It is therefore submitted that new independent claim 32, and claims 33 and 34 dependent thereon, are patentable.

§103

Claims 18 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 7-11637.

Claims 20-22 and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 56-34823 in view of Japan No. 1-94122.

These rejections are respectfully traversed.

Patentability

Claim 18

Independent claim 18 requires:

(1). Rotating a screwed steel pile having a wing at the pile end portion so as to penetrate the screwed steel pile into the ground;

(2). Reversing the screwed steel pile so as to draw it by an appropriate distance when a quantity of penetration of the screwed steel pile is remarkably decreased;

(3). Rotating the screwed steel pile again so as to penetrate it into the ground.

Applicants maintain that Japan No. 7-11637 (JP '637) does not disclose or suggest the method of construction recited in the above three steps. Applicants maintain that JP '637 does not disclose or suggest steps (2) and (3), i.e., reversing, withdrawing and the rotating again. JP '637 only discloses the rotating of step (1) for causing the pile of JP '637 to excavate downwardly.

The Office Action takes the position that the reversing, withdrawing and the rotating again would be inherent in JP '637.

The applicants respectfully disagree. Inherency requires that the inherent subject matter be necessarily within the disclosure of the cited reference. There is no reason why the undisclosed reversing, withdrawing and

rotating again, would be necessarily within or obvious in view of the disclosure of JP '637.

It is therefore submitted that independent claim 18 is patentable over Japan No. 7-11637.

Claim 19

Independent claim 19 adds the following claim elements to the subject matter of claim 18.

In step (2), the reversing step is required to draw the screwed steel pile out by a distance at least not less than the pitch of wing.

In step (3), there is rotating of the screwed steel pile again so as to penetrate it into the ground under the condition that the pile head is given a load directed downward.

The additional claim elements of independent claim 19 are not disclosed or suggested in JP '637.

Therefore, independent claim 19 is further patentable over Japan No. 7-11637.

Claim 20

Independent claim 20 requires a different method of construction to be practiced on a soft stratum and on a hard or bearing stratum.

(1). On the soft stratum, claim 20 requires a drilling, rotating and penetrating wherein drilled soil and sand cannot enter the pile;

(2). On the hard stratum, claim 20 requires inside-drilling so that drilled sand and soil can enter the pile.

In the first instance, applicants maintain that Japan No. 56-34823 (JP '823) and Japan No. 1-94112 (JP '112) are not properly combinable because JP '823 is a concrete pile with a peripheral screw flange and JP '112 is a steel pile without a peripheral screw flange.

The English Abstract of JP '823 states under the heading CONSTITUTION:

and both of the pile 1 and torque tube 4 are stood up in a combined condition on a surface of the ground. Next, the pile 1 and torque tube 4 are rotated in reverse with respect to each other to proceed into the ground during digging

JP '823 does not disclose or suggest the two different steps of the construction method of independent claim 20, i.e., (1) drilling on the soft stratum wherein drilled soil and sand cannot enter the pile and (2) inside drilling on the hard stratum wherein drilled soil and sand can enter the pile.

In JP '823, the pile 1 and the torque tube 4 rotate together during the entire drilling operation so that soil and sand always enter the pile. JP '823 does not disclose or suggest preventing soil and sand from entering the pile when drilling on the soft stratum.

JP '112 only discloses inside-drilling and does not provide an apparatus that can conduct outside drilling.

Soil and sand enter the pile during the entire drilling operation of JP '112.

JP '823 in view of JP '112 do not disclose or suggest the two different drilling steps of independent claim 20.

Therefore, independent claim 20 is patentable over Japan No. 56-34823 in view of Japan No. 1-94112.

Claim 21

Dependent claim 21 depends from independent claim 20. Dependent claim 21 is directed to jetting, e.g., cement mortar or cement milk, from the end of the auger when the screwed pile is penetrated into the bearing stratum.

Dependent claim 21 is patentable over Japan No. 56-34823 in view of Japan No. 1-94112 for the same reason independent claim 20 is patentable.

Claims 22 and 30

Independent claims 22 and 30 require a different method of construction on a soft stratum and on a hard or bearing stratum.

(1). On the soft stratum, claims 22 and 31 require.

(a). drilling, rotating and penetrating the pile into the soft stratum of the ground so as to drill soil and sand by the drilling wing and forcibly discharging the drilled soil and sand to the periphery of the pile body;

(b). the rotation of the auger being stopped during penetrating the pile so that the soil and sand cannot enter the pile;

(2). On the hard stratum, claims 22 and 31 require drilling and rotating the auger on the hard stratum so that the drilled soil and sand can enter the pile.

Again, the applicants maintain that Japan No. 56-34823 (JP '823) and Japan No. 1-94112 (JP '112) are not properly combinable because JP '823 is a concrete pile with a peripheral screw flange and JP '112 is a steel pile without a peripheral screw flange.

Attention is again called to the quote from the English Abstract of JP '823 set forth on page 13.

JP '823 does not disclose or suggest the two different steps of the construction method of independent claims 22 and 31, i.e., (1) drilling on the soft stratum with the drilling wing, with the rotation of the auger being stopped, so that the drilled soil and sand cannot enter the pile and (2) drilling with the auger on the hard stratum so that the drilled soil and sand can enter the pile.

In JP '823, the pile 1 and the torque tube 4 rotate together during the entire operation so that soil and sand always enter the pile. JP '823 does not disclose or suggest preventing soil and sand from entering the pile when drilling on a soft stratum.

JP '112 only discloses inside-drilling. JP '112 does not have the drilling wing on the outside of the pile

end of the screwed steel pile body as required in independent claims 22 and 31. In JP '112, soil and sand enter the pile during the entire drilling operation.

JP '823 in view of JP '112 do not disclose or suggest the two different drilling steps of independent claims 22 and 31.

Therefore, independent claims 22 and 31 are patentable over Japan No. 56-34823 in view of Japan No. 1-94112.

Summary

In view of the foregoing, it is submitted that all the pending claims, i.e., claims 18-22 and 28-34, are patentable.

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed to issue.

Respectfully submitted,

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